REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application.

Claims 1, 3-8, 10, 11, 13-15 and 17-28 are now present in this application. Claims 1, 8, 13, 17 and 22 are independent. By this Amendment, Fig. 5 is amended, claims 9, 12 and 16 are canceled, claims 10, 11, 18 and 20 are amended to change their dependency so that they do not depend from a canceled claim, and claims 1, 8, 13, 17 and 22-24 are amended. No new matter is involved.

PERSONAL INTERVIEW

Applicants acknowledge with appreciation the courtesies extended to their below-named representative, Mr. Robert J. Webster, by Examiner Kyle during the personal interview conducted on October 30, 2006. During that interview, agreement was reached concerning proposed amendments to the independent claims so that the amended independent claims patentably define over the applied art. Applicants' undersigned representative also proposed claim language amendments to method claims 22-28 to reflect that what is being claimed is a method of assembly of a hinge, not a method of making a hinge. Examiner Kyle indicated that he would reconsider the restriction requirement based on the amendments to claims 22-28. Examiner Kyle and Applicants' undersigned representative also discussed the need for a correction to Fig. 5, which uses numeral 84 to refer to two different parts of the disclosed device. Fig. 5 has been amended to correct this matter without entering new matter.

REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 1 and 3-11 stand rejected under 35 U.S.C. § 112, second paragraph, for omitting essential elements, such omissions amounting to a gap between the elements, citing MPEP §2172.01. Applicants respectfully traverse this rejection.

The Office Action asserts that the omitted elements are the elements of the rear hinge that provide the claimed functions, and the elements of the front hinge that rotatably support the front of the drum.

Applicants respectfully disagree with this assertion for a number of reasons.

Firstly, claims are considered to be definite, as required by the second paragraph of 35 U.S.C. § 112, when they define the metes and bounds of a claimed invention with a reasonable degree of precision and particularity. *See* In re Venezia, 530 F.2d 956, 958, 189 USPQ 149, 151 (CCPA 1976). In that case the court did not require Venezia's claims to recite his elements as being interconnected. Applicants' claims recite a slot feature structure, and only need to recite those elements which distinguish the invention from the prior art. The definiteness of claim language is analyzed, not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing ordinary skill in the pertinent art, In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971). Furthermore, the Applicants may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought. *See* in this regard, In re Swinehart, 439 F.2d 210, 160 226 (CCPA 1971).

The recitation in the claims of the various recited elements is clear, and one of ordinary skill in the art can readily determine the metes and bounds of the invention without any further recitations.

The test for compliance with the second paragraph of 35 U.S.C. § 112, as stated in Miles Lab., Inc. v. Shandon Inc., 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993), cert. denied, 510 U.S. 1100 (1994) is whether one skilled in the art would understand the bounds of the claims when read in light of the specification. If the claims, read in light of the specification, reasonably apprise those skilled in the art of the scope of the invention, Section 112 demands no more. *See also*, In re Merat, 519 F.2d 1390, 1396, 186 USPQ 471, 476 (CCPA 1975), which stated that the question under Section 112, second paragraph is whether the claim language, when read by a person of ordinary skill in the art in light of the specification, describes the

subject matter with sufficient precision that the bonds of the claimed subject matter are distinct. *See also*, In re Warmerdam, 33 F3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994).

The second paragraph of 35 U.S.C. § 112 requires claims to be set out and circumscribe a particular area with a reasonable degree of precision and particularity, In re Johnson, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977).

All of Applicants' claims satisfy these requirements.

Moreover, the case cited in MPEP §2172.01 (on which this rejection is based) to require inclusion of essential structural cooperative relationships, In re Mayhew, 188 USPQ 356 (CCPA 1976), has been severely limited by the decisions of the Federal Circuit regarding the very similar Gentry Gallery case, cited below.

This Application is unlike the application in Gentry Gallery, Inc. v. Berkline Corp., 43 USPQ2d 1498 (Fed. Cir. 1998) in which the court's determination that the patent disclosure did not support a broad meaning for the disputed claim was premised on clear statements in the written description that described the location of a claim element - the "control means" - as "the only possible location" and that variations were "outside the stated purpose of the invention", Id. at 1503. The Federal Circuit subsequently held, in Johnson Worldwide Associates Inc. v. Zebco Corp., 50 USPQ2d 1607 (Fed. Cir. 1999) that Gentry Gallery considers the situation where the patent's disclosure makes it crystal clear that a particular (i.e., narrow) understanding of a claim term is an "essential element of [the inventor's] invention." Applicants submit that this decision also limited the applicability of the In re Mayhew decision.

In this regard, Applicants' disclosure never states, or otherwise admits, that any particular feature is an essential element of the invention. Absent such an admission, there is no statutory basis to make the requirements set forth in this rejection under 35 U.S.C. § 112. Accordingly, this rejection of claims 1 and 3-11 is improper and should be withdrawn.

Applicants respectfully submit that this rejection improperly equates claim scope with indefiniteness and amending the claims to include additional features of the front hinge and the rear hinge will not clarify the metes and bounds of the claims, which are clear already.

The outstanding Office Action does not respond to or treat in any way the previous two paragraphs, both of which were presented in the Reply filed on March 19, 2006, in contravention of the requirement to fully address those arguments in MPEP §707.07(f). For this reason alone, the outstanding Office Action is improper and should be withdrawn.

The outstanding Office Action states that Applicants merely argue case law and "does not apply to the instant application." Applicants respectfully disagree with this statement. The case law that is cited and discussed by Applicants reinforces Applicants' position that Applicants' currently pending claims fully comply with the requirements of 35 USC §112, second paragraph, and set forth what that statute requires based on existing case law. Applicants point out, by citing more recent case law, that the case law on which the rejection is based has been severely limited and does not require Applicants to add any allegedly essential features to its currently pending claims because Applicants have not indicated in their disclosure that the allegedly missing essential features are essential to Applicants' invention. Applicants also cite case law that points out that the claims need only define the metes and bounds of the invention with reasonable clarity. Applicants need not elaborate any further on this because the Office Action does not allege that the claim language does not define the metes and bounds of the invention with reasonable clarity. Instead, the rejection is based on application of a principle that has been severely limited and does not apply to this Application for reasons presented in the traversal of this rejection.

Applicants have not "merely cited case law and not applied it to the claims." Applicants have cited case law indicating what 35 USC §112, second paragraph requires, and the Office Action itself has not argued that the claims violate the principles set forth in that case law, which is evidence that the basis of the rejection is improper and is another reason why this rejection should be withdrawn.

The outstanding Office Action states, for the first time, that whereas the structure including a ball bearing, housing and shaft have been included in the independent claims 1 and 8, there is no connection of this structure to the claimed function.

In response to this new ground of rejection, Applicants respectfully submit that these three elements are not being claimed in "means-plus-function" format (compare, 35 USC §112, sixth

paragraph) and, as such, do not need to recite a particular function. All that the claimed language in issue needs to do is to make the metes and bounds of the invention clear, and these claimed features do exactly that. The Office Action does not contend otherwise.

These arguments were discussed during the aforementioned personal interview.

Accordingly, the Office Action fails to provide objective factual evidence that the claims under rejection fail to comply with 35 USC §112, second paragraph.

Reconsideration and withdrawal of this rejection of claims 1, 3-8, 10, and 11 are respectfully requested. Applicants note that claim 9 has been canceled.

RESTRICTION/ELECTION BY PREVIOUS PRESENTATION

The outstanding Office Action has withdrawn claims 22-28 from consideration, stating that they are directed to a distinct method of fabricating a hinge apparatus, i.e., an invention that is independent and distinct from the originally claimed invention, which is directed to a hinge apparatus.

Unfortunately, the Office Action completely fails to provide any objective support for this conclusion that these inventions are independent and distinct, or to otherwise justify the merits of this restriction and withdrawal of claims 22-28 from consideration on their merits, in contravention of the requirement to do so in MPEP Chapter 800. This also denies Applicants fundamental substantive and procedural due process under the Administrative Procedures Act. *See* in this regard, In re Zurko, 119 S.Ct. 1816, 50 USPQ2d 1930 (1999), and In re Gartside, 53 USPQ2d 1769 (Fed. Cir. 2000). For these reasons alone, the holding of election by previous presentation and the withdrawal of claims 22-28 is improper.

In order to make a proper holding of election by previous presentation, the Office Action has to establish (not just merely conclude) that (1) the inventions are independent (see MPEP §§802.01, 806.06, 908.01) and distinct as claimed (see MPEP §§806.05 through 806.05(j); and (2) there would be a serious burden on the Examiner if restriction is not required, as set forth in MPEP §803, Section I., found on page 800-4 of the MPEP, Revision 3, dated August 2005.

Because the requirements of the MPEP have not been complied with, this restriction and holding of election by previous presentation and withdrawal of claims 22-28 from consideration on their merits is improper, must be withdrawn, and claims 22-28 should be examined on their merits.

Furthermore, as discussed during the aforementioned personal interview, Applicants have amended claims 22-28 to positively recite a method of assembly of a hinge apparatus, not a method of making a hinge that involves forming of certain hinge components. In this regard, the word "forming" has been changed to - - providing - - in all of these method claims that positively recite "forming."

Moreover, Applicants respectfully submit that claims 22-28, as amended to positively recite a combination of features, including stopping the shaft fixing member by inserting a stopping pin located at the reinforcing member into an engaging groove formed at the case between engaging protrusions formed at the shaft fixing member, patentably define over the applied art of record for reasons discussed above with regard to claims 1, 3-8, 10 and 11.

Reconsideration, withdrawal of this holding of restriction/election and examination of claims 22-28 on their merits, and allowance of claims 22-28 are respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 8-10 and 12-20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,483,756 to Heyder. This rejection is respectfully traversed.

Anticipation under 35 U.S.C. § 102(b) requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).

If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by

persons of ordinary skill." Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Id. at 1269, 20 USPQ2d at 1749 (quoting In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (C.C.P.A. 1981).

This rejection is moot with respect to claims 9, 12 and 16, which have been canceled.

Claims 8 and 10, as amended, positively recite a combination of features, including a base nut having a disc shape installed at a nut-installed portion formed at the case; and a plurality of engaging protrusions spaced from one another with a certain interval therebetween around the outer circumference of the base nut for engagement with a stopping pin to restrict rotation of the base nut member to a limited extent in assembly of the hinge apparatus.

Claims 13-15 and 17-20, as amended, positively recite a combination of features including a base nut member screw-engaged with the shaft, installed at an inner surface of the case and having a plurality of engaging protrusions spaced from one another with a certain interval therebetween around the outer circumference of the base nut member; and a stopping pin provided so as to engage with the engaging protrusions and restrict rotation of the base nut member to a limited extent in assembly of the hinge apparatus.

Applicants respectfully submit that Heyder does not disclose these positively recited features of claims 8, 10, 13-15 and 17-20, and also submits that Examiner Kyle agreed, during the aforementioned personal interview, that these features are not disclosed by Heyder.

Accordingly, the Office Action fails to provide a *prima facie* case that Heyder anticipates claims 8, 10, 13-15 and 17-20.

Accordingly, the Office Action fails to make out a *prima facie* case of anticipation of claims 8, 10, 12-15, and 17-20 under 35 U.S.C. § 102(b) by Heyder.

Reconsideration and withdrawal of this rejection of claims 8-10 and 12-20 are respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 1 and 3-7 stand rejected under 35 USC §103(a) as unpatentable over Heyder in view of U.S. Patent 5,251,859 to Cyrell et al. ("Cyrell"). This rejection is respectfully traversed.

Because the rejection is based on 35 U.S.C. §103, what is in issue in such a rejection is "the invention as a whole," not just a few features of the claimed invention. Under 35 U.S.C. §103, " [a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under §103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *See* In re O'Farrell, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety. *See* Medtronic, Inc. v. Cardiac Pacemakers, Inc., 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983).

In rejecting claims under 35 U.S.C. § 103, it is incumbent on the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See* In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that

the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

A showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." *See* In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

Moreover, it is well settled that the Office must provide objective evidence of the basis used in a prior art rejection. A factual inquiry whether to modify a reference must be based on objective evidence of record, not merely conclusory statements of the Examiner. *See* In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Furthermore, during patent examination, the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the Applicant is entitled to the patent. Only when a *prima facie* case is made, the burden shifts to the applicant to come forward to rebut such a case.

Claim 1 has been amended to positively recite a combination of features including a reinforcing member having a flat board shape and a convex shaped nut-installed portion for reinforcing stiffness of the case when the shaft is engaged therewith is mounted at an outer surface of the case.

Examiner Kyle agreed during the aforementioned personal interview that claim 1, as amended, is not disclosed or rendered obvious by the applied references.

Accordingly, the Office Action fails to present a *prima facie* case of obviousness of the claimed invention based on Heyder in view of Cyrell.

Reconsideration and withdrawal of this rejection of claims 1 and 3-7 are respectfully requested.

Claims 11 and 21 stand rejected under 35 USC §103(a) as unpatentable over Heyder in view of U.S. Patent 5,963,432 to Crowley. This rejection is respectfully traversed.

Initially, Applicants respectfully submit that claim 11 depends from claims 8 and 9, and that claim 21 depends from claims 17 and 18 and that the subject matter of claims 8, 9, 17 and 18 is not anticipated by Heyder for reasons discussed above regarding the traversal of the rejection of claims 8, 9, 17 and 18 as anticipated by Heyder. Moreover, Crowley is not applied to remedy the deficiencies in Heyder. Accordingly, even if one of ordinary skill in the art were properly motivated to modify Heyder in view of Crowley to substitute a weld or a rivet for Heyder's nut 4, the resulting modified version of Heyder would not render the claimed invention obvious.

Moreover, the Office Action does not provide objective factual evidence that the teaching of equivalence of a threaded rod and nut, adhesive, rivet or clamp in the printed circuit board standoff art would motivate one of ordinary skill in the art to substitute a rivet or a weld for the hex nut-bearing journal arrangement of Heyder, especially where the bearing journal of Heyder is threaded and doing away with it would do away with this fundamental feature of Heyder's invention would probably make Heyder's clothes dryer inoperative.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of claims 11 and 21 under 35 U.S.C. § 103(a) by Heyder in view of Crowley.

Reconsideration and withdrawal of this rejection of claims 11 and 21 are respectfully requested.

ADDITIONAL REFERENCE

During the aforementioned personal interview, Examiner Kyle brought to the attention of, and provided a copy of JP 2005-177513 to, Applicants' below-named representative. Applicants

respectfully submit that the publication date of JP 2005-177513 is July 17, 2005, and, as such, is not prior art to this Application, which was filed on January 16, 2004. Applicants thank Examiner Kyle for providing a copy of this publication to Applicants and, as noted during the aforementioned personal interview, are providing to Examiner Kyle a copy of an English language abstract and a computer-generated English language translation of JP 2005-177513 from the Japanese Patent Office (JPO) Internet website. Examiner Kyle indicated that he would cite JP 2005-177513 on a Form PTO-892 in the next Office Action.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Accordingly, Applicants respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Moreover, Applicants continue to traverse the restriction requirement and respectfully request that it be withdrawn and that claims 22-28 be examined on their merits and allowed.

It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert J. Webster, Registration No. 46,472, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: October 30, 2006

Respectfully submitted,

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Attachments: Replacement Drawing Sheets
Annotated Drawing Sheets
English Language Abstract and Computer Generated Translation of JP 2005-177513

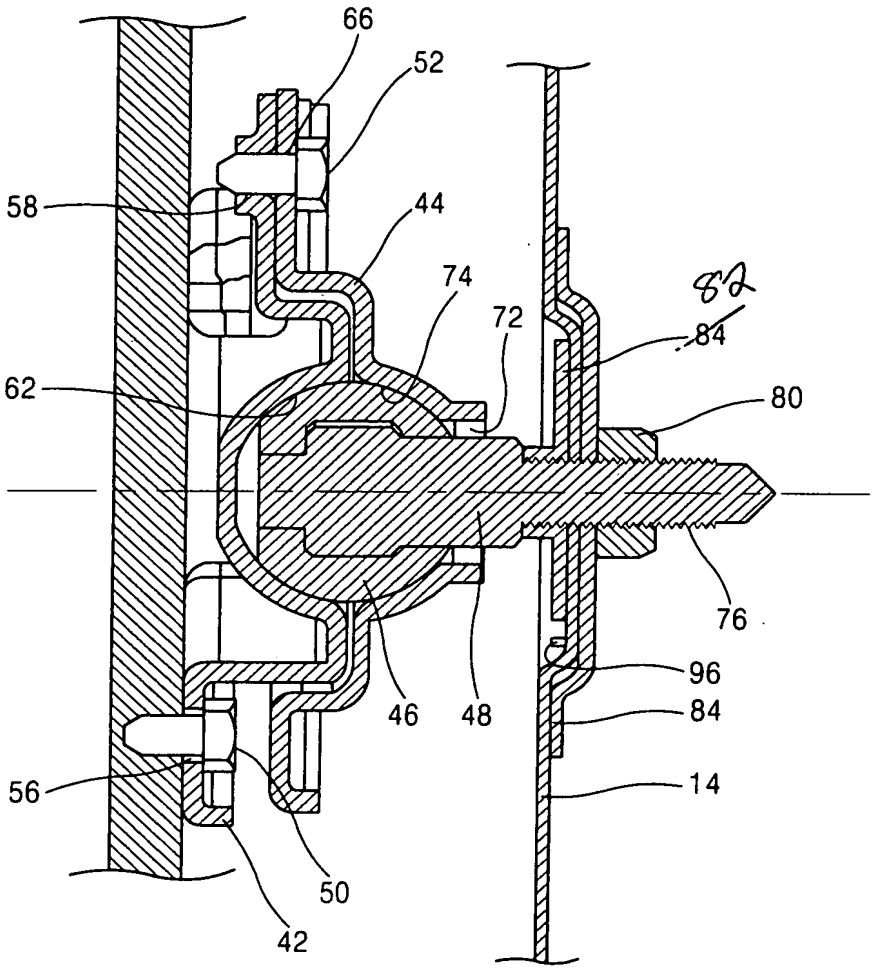
AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 5. This sheet, which includes only Fig. 5, replaces the original sheet including the same Figure.

Fig. 5 has been amended to remove the inconsistency of having numeral 84 label two different elements in Fig. 5.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

FIG. 5



ANNOTATED SHEET

PATENT ABSTRACTS OF JAPAN

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2003 200394474	22.12.2003	KR
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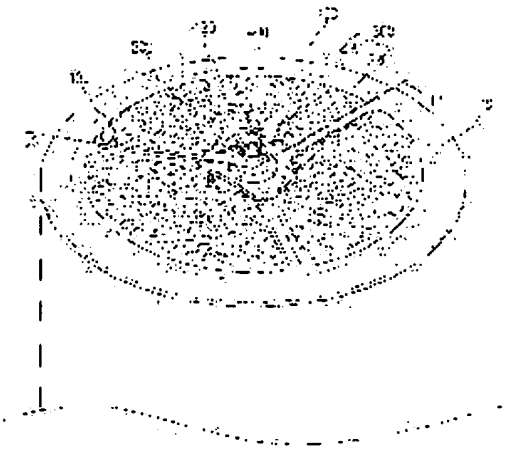
(54) DRUM SUPPORT STRUCTURE FOR CLOTHES DRYER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a drum support structure of a dryer capable of easily absorbing vibration generated by the rotation of a drum to prevent the the dryer from being vibrated from its bottom part by improving the support structure of a rear wall of the drum.

SOLUTION: The dryer comprises a drying drum containing laundry; a lower housing connected to the rear wall of the drum by a rivet; an upper housing seated on the upper side of the lower housing; and a journal bearing including a spherical bearing inserted between the upper and lower housings, and a shaft coupled to the bearing.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[Field of the Invention]
[0001]
About a drier, in more detail, a drum enables it to rotate without friction within a drier cabinet, and this invention relates to the drum supporting structure which said drum is supported by the cabinet and enables it to maintain a horizontal further.
[Background of the Invention]
[0002]
Generally, a drum type dryer is a household-electric-appliances device which dries a desiccation object by ventilating in a drum the hot blast generated with an electric heater, a combustion equipment for fuel gas, etc., and evaporating the residual moisture of a desiccation object.
[0003]
In detail, said drum type dryer is divided roughly into a condensation type and an exhaust system by the method. A condensation type drum dryer is a method with which a desiccation process is performed because the air which flowed in the desiccation drum is not discharged out of a dryer but circulates through the inside of a dryer in more detail. And an exhaust-system drum dryer is a method discharged out of a dryer, after the air which flowed in the desiccation drum absorbs moisture from a desiccation object.
[0004]
Moreover, said exhaust-system drum dryer is further divided into a gas type and an electric type by the class of heater which heats the air which flows in a desiccation drum. In detail, as for a gas type oven, the heater for heating the air which flows in said desiccation drum is equipped with a component like a furnace (furnace), an igniter, and a frame sensor, and gas burns in said furnace. And the air which flows in a desiccation drum with the heat generated from the burning gas is heated. Moreover, an electric-type oven consists of a heat ray which the heater for heating the air which flows in said desiccation drum coiled many times. And if a power source is impressed, heat will occur from said heater, the heat will be heated by the elevated temperature by being transmitted to the air which passes said heater, and the heated air will be the method which it flows [method] in a drum and dries a desiccation object.
[0005]
On the other hand, in the case of the conventional drier, the front section of a drum is supported by ** arrival of the edge circles peripheral surface of a drum being carried out to a front cover, and the tooth-back section of a drum is supported by the bearing structure with which a core is equipped being connected with bag covering of a drier.
[0006]
However, the conventional drier drum supporting structure has the demerit on which said bearing cannot absorb vibration easily, when shaking, while a drum rotates. Therefore, the phenomenon in which vibration generated in the rotation process of a drum is transmitted to the whole dryer, and a dryer shakes from a bottom occurs.

[0007]
In addition, the phenomenon in which the lubricating oil attached to said bearing section leaks outside, some of dirt and lubricating oils are attached by the drum rear face, and the washing becomes dirty may occur.
[0008]
Furthermore, at the time of rotation of a drum, between a drum and bearing, frictional force increases, the bearing section receives damage because the lubricating oil of said bearing leaks, and there is demerit to which rotation of a drum is not carried out smoothly.
[Description of the Invention]
[Problem(s) to be Solved by the Invention]
[0009]
This invention aims at offering the drum supporting structure of a dryer which can remove that were proposed in order to solve the above problems, and vibration which is improving the supporting structure of a drum posterior wall of stomach, and is generated at the time of rotation of a drum is absorbed easily, and a dryer shakes from a pars basilaris ossis occipitalis.
[0010]
Moreover, this invention prevents the phenomenon in which a lubricating oil leaks out of bearing by improving the supporting structure of a drum posterior wall of stomach, decreases the frictional force between bearing and a drum posterior wall of stomach, and aims at offering the drum supporting structure of the dryer with which rotation of a drum is made to be performed smoothly.
[Means for Solving the Problem]
[0011]
In order to attain said purpose, the drier concerning this invention contains journal bearing by which the shaft combined with the bearing of the globular form inserted between bottom housing by which rivet (rivet) association is carried out, upper housing which carries out ** arrival to said bottom housing bottom, and said upper housing and said bottom housing, and said bearing is contained in the posterior wall of stomach of the desiccation drum which holds the washing, and said desiccation drum.
[0012]
Moreover, in other side faces, the drier concerning this invention wraps a part of supporter material in which the bearing combined with the peripheral face of a shaft and said shaft by insertion injection is contained, and said supporter material. Housing with which the block section which projects in predetermined height, and the concavity which caves in in the predetermined depth are contained inside, the outer seal put on one 1 side of said housing, and the inner seal which prevents the leakage of ** rare ** oil on the outside of said supporter material are included.
[0013]
Moreover, in other side faces, the drum supporting structure of the drier concerning this invention contains housing, the bearing member which is held in said housing and formed of insertion injection, the inner seal which is inserted in said housing inside and prevents friction and the noise, and the outer seal which carries out ** arrival to the outside of said housing, and prevents the leakage of oil.
[Effect of the Invention]
[0014]
Vibration which the dryer concerning this invention generates in the rotation process of a desiccation drum by the above configurations is absorbed easily, and it is effective in the phenomenon in which a dryer shakes being removed.
[0015]
Furthermore, since a lubricating oil does not leak from the bearing section which supports a desiccation drum, it is effective in the washing not becoming dirty.
[0016]
In addition, the frictional force generated between said desiccation drums and bearings in the process which a desiccation drum rotates is reduced, and rotation of a desiccation drum is performed smoothly. Moreover, it is effective in the life of the motor which drives said bearing section and a desiccation

drum becoming long by rotation of a desiccation drum being performed smoothly.

[Best Mode of Carrying Out the Invention]
[0017] Hereafter, the concrete example of this invention is explained to a detail based on a drawing. However, the thought of this invention is not restricted to the below-mentioned example, and can restrict easily other examples included within the limits of the thought of other invention or this invention by addition of other components, modification, deletion, etc.
[Example]
[0018]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1]
The desiccation drum on which the washing is held,
Bottom housing which carries out riveting to the posterior wall of stomach of said desiccation drum,
Upper housing which carries out ** arrival to said bottom housing bottom,
Globular form bearing inserted between said upper housing and said bottom housing, and journal bearing containing the shaft combined with said bearing,
****** -- the drum supporting structure of the dryer for the washing desiccation characterized by things.

[Claim 2]
Said bottom housing is the drum supporting structure of a dryer according to claim 1 characterized by including bearing ****** for a projection and an up side caving in inside in predetermined height, and for said bearing carrying out ** arrival to it.
[Claim 3]
Said bottom housing is the drum supporting structure of a dryer according to claim 1 which is bent in predetermined height and characterized by including at least one or more conclusion edges concluded with said upper housing.
[Claim 4]
Said conclusion edge is the drum supporting structure of a dryer according to claim 3 characterized by including at least one or more conclusion holes inserting a conclusion member inside.
[Claim 5]
Said conclusion edge is the drum supporting structure of a dryer according to claim 3 characterized by being further extended by the radial from the edge of bottom housing.
[Claim 6]
Said upper housing is the drum supporting structure of a dryer according to claim 1 characterized by including ****** in which caves in inside and a sealing member carries out ** arrival.
[Claim 7]
Said upper housing is the drum supporting structure of a dryer according to claim 1 characterized by including the bearing hold section in which it caves in inside said body side, and said bearing is held.
[Claim 8]
Said upper housing is the drum supporting structure of a dryer according to claim 1 characterized by including the support sleeve by which it is extended by the bottom in predetermined height and said shaft is inserted in it.
[Claim 9]
Said upper housing is the drum supporting structure of a dryer according to claim 1 characterized by including at least one or more conclusion holes which it is formed in an interior 1 side and a conclusion member penetrates.
[Claim 10]

Said upper housing or said bottom housing is a temporary tightening join projection which projects in predetermined height inside,
The drum supporting structure of a dryer according to claim 1 characterized by including an insertion hole inserting said temporary tightening join projection.
[Claim 11]
Said at least two or more temporary tightening join projections are the drum supporting structure of a dryer according to claim 10 characterized by being formed.
[Claim 12]
Said insertion hole is the drum supporting structure of a dryer according to claim 10 characterized by being the same as the number of said temporary tightening join projection, or being formed the above.
[Claim 13]
The drum supporting structure of a dryer according to claim 1 characterized by intervening in a round sealing member in said upper housing.
[Claim 14]
The drum supporting structure of a dryer according to claim 1 characterized by including the sealing member put on said upper housing bottom.
[Claim 15]
Said bearing is the drum supporting structure of a dryer according to claim 1 characterized by combining with the peripheral face of said shaft by insertion injection.
[Claim 16]
Said bearing is the drum supporting structure of a dryer according to claim 1 characterized by including the oil groove formed in the shaft orientations of said shaft, and parallel in a peripheral face.
[Claim 17]
Said shaft is the drum supporting structure of a dryer according to claim 1 characterized by forming a screw thread in a peripheral face since a nut is inserted.
[Claim 18]
The drum supporting structure of a dryer according to claim 1 characterized by applying a lubricating oil to the inner skin of said upper housing and/or said bottom housing.
[Claim 19]
Said sealing member is the drum supporting structure of a dryer according to claim 14 characterized by the sealing member of a rubber material combining with the body part of a metal material by insertion injection.
[Claim 20]
Said sealing member is an internal curtain which is formed inside and prevents the leakage of oil,
The drum supporting structure of a dryer according to claim 14 characterized by including the external curtain which forms a layer and intercepts the leakage of oil to a duplex with said internal curtain.
[Claim 21]
Said sealing member is the drum supporting structure of a dryer according to claim 13 characterized by being a felt material.

[Translation done.]